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Publication of The AMERICAN INSTITUTE of CHEMISTS

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THE AMERICAN INSTITUTE OF CHEMISTS, INC.

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EDITORIAL

Ideals and Accomplishments

THE present time, when we are entering the twelfth year of this Institute's service to its members and to the public, seems not inappropriate for a brief review of the organization's work and of its aims. We believe there will be no dissent among chemists from the theorem that the profession of Chemistry is a *profession*. We believe, indeed, that this fact will be conceded by the great majority of American people at large. Regardless of whether his practice is one of consultation, or is devoted to the service of a single employer, every chemist who is a chemist is striving to lay bare the vital truths of science and to apply those truths to promotion of the progress of mankind.

The conscientious chemist recognizes the service which can be and has been rendered him by The American Institute of Chemists, founded more than eleven years ago by a small group of leaders in the profession. We can best review this service first by reprinting here Article I of the Constitution of the Institute as follows:

Article I

Name and Objects

Section 1. The name of this organization shall be The American Institute of Chemists.

Section 2. Its objects shall be to advance the profession of Chemistry in the United States of America. To this end it will:

(1) Provide and enforce a code of principles of professional conduct which merits public esteem and justifies confidence in the integrity of the chemist;
(2) Establish and maintain a standard of proficiency of such excellence as to insure competent and efficient service;
(3) Secure an adequate basic training for the profession, and admit to fellowship in the Institute only those of proved education, experience, competency, and character;
(4) Strive to enhance the prestige and distinction of the profession so as to extend its influence and usefulness;

(5) Establish and maintain a register of its membership in which there will be a complete record of the training, experience, and fitness for service of each individual member;

(6) Seek to improve the economic status of the profession by co-operating with employers to secure a satisfactory appreciation and evaluation of the services of the chemist;

(7) Provide a means for the appropriate recognition of distinguished service to the profession;

(8) Cooperate with all the agencies serving chemistry to make the profession of chemistry a powerful factor in the advancement of intellectual and material progress in the United States of America, to the end that this nation shall assume its rightful place as a leader among the nations of the world in scientific thought and accomplishment;

(9) Lend support to the work of the chemical societies in the education of the public to a better appreciation of the contribution of the chemist to world progress; and

(10) Render such other services to the profession as developments shall warrant and The American Institute of Chemists shall approve.

In attempting to gauge the degree to which the Institute has accomplished these aims during the past eleven years, we see that among other achievements it has established a standard curriculum of chemical education; formulated a Code of Ethics for professional chemists; obtained reclassification and higher compensation for many federal and municipal chemists; published THE CHEMIST, the only periodical devoted to the frank discussion of the personal and professional interests of chemists; awarded annually a medal for "noteworthy and outstanding service to the science of chemistry and the profession of chemist in America;" given prestige to its members so that both here and abroad, Fellowship in The American Institute implies competence for testimony in courts of law, and acknowedged professional standing.

Who can doubt that the world is moving into an age which will offer chemists increasing opportunities? Recent discoveries concerning the constitution of matter will be developed. Plastics and other synthetics are daily coming into more general use. New alloys are making rapid strides. The door of opportunity for the chemist is still wide open and The American Institute of Chemists offers every chemist the tangible benefits of an established organization for the protection and advancement of the profession.

James B. Conant, LL.D.

Institute Medal to be conferred on Dr. Conant

THE Jury of Medal Award of The American Institute of Chemists has voted to confer this year the Institute Gold Medal for "*noteworthy and outstanding service to the science of chemistry or the profession of chemist in America,*" upon James B. Conant, Ph.D., LL.D., President of Harvard University.

This award undoubtedly will receive the approbation of all Fellows and members of the Institute, of chemists and chemical engineers in general, of Dr. Conant's many friends and co-workers and of all who know of his many valuable contributions to the advancement of chemical knowledge and to the prestige of the profession of chemistry.

Presentation of the medal will be made at the annual dinner of the Institute, which will be held at The Chemists' Club, 52 East 41st Street, New York City, May 21st, at 7:30 P. M.

Hans T. Clarke, D.Sc., F.A.I.C., Professor of Biological Chemistry at Columbia University, has been selected to make the Presentation Address. A large gathering of members and guests of the Institute will attend the dinner to witness presentation of the Institute's medal to Dr. Conant. All members and their guests will be welcome.

Annual Meeting

THE Twelfth Annual Meeting of The American Institute of Chemists will be held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on Monday, May 21, 1934.

The program is as follows:

12:00 M. Luncheon of the National Council.

1:00 P. M. Business Meeting of the National Council.

3:00 P. M. Annual meeting of the Institute for the consideration of and action upon submitted amendments to the Constitution, and for the consideration of such other business as may be properly presented. The results of the annual election will be announced at this time. Notice of the proposed revisions of the Constitution is being mailed to the membership.

7:30 P. M. Annual Dinner.

8:30 P. M. Presentation of the medal of The American Institute of Chemists to Dr. James B. Conant. Presentation Address will be made by Dr. Hans T. Clarke, Professor of Biological Chemistry, Columbia University.

All members are earnestly urged to attend the Annual Meeting as well as the Dinner and Medal Award. Guests of members will be welcome at the Dinner and Award of Medal.

NOTICE

In order to bring the schedule of publication of THE CHEMIST into closer accord with the Calendar, it has been decided to title this issue "March-April", and to complete nine issues for this Calendar year by issuing one additional number, to appear during the usual summer interim, either in July or in September.

Research and the Chemist

By W. J. Baëza, F.A.I.C.

Address presented at the Joint Meeting of New York Chapter, American Institute of Chemists and North Jersey Section, American Chemical Society, Elizabeth, N. J., April 9, 1934.

WEBSTER tells me that "research" *is a searching for something with care and diligence,* and gives as a second definition—*careful and critical examination in seeking facts or principles; diligent investigation.* I will not attempt to discuss such a very wide field. Fortunately, the subject of this address "Research and the Chemist" marks the first of the limitations which I have set. Such searching for something with care and diligence as might be required to secure a good drink of whisky will not be covered in these remarks, though at the moment I think only chemical research can produce a good drink of *good* whisky. I am going to limit myself to a discussion of the chemist doing industrial research work.

The types of investigations which properly come under the heading of "Industrial Research Work" are infinite in scope and, with your permission, I am going to recount only personal experience. Let me point out that research in any organization which employs technical assistants is by no means confined to the research chemist. A man with the proper qualifications who works on a bench or is foreman of a section in a plant, or is in charge of a control station, will find many opportunities for careful and critical examination into the work he is doing with the aim, which is always paramount in industrial investigations, of greater production, more uniform products, or cheaper methods of operation. The chief chemist with a large laboratory,

which has been set up primarily for control, should spend most properly not more than 20% of his time as an administrator and 80% of his time should be spent on what may properly be called "research." Research, which is properly the function of the control laboratory, falls into several types. Control methods themselves, the actual methods used by the analytical chemists, are subject to study for improvement, simplification, cheapness, and rapidity. As chief chemist in a large sugar plant, it was my privilege to assist in the solution of many control problems. A few examples may illustrate how the control laboratory, functioning entirely as a source of data, initiates constant investigation.

Our organization had been planned to handle the control of grinding about 5,000 tons of cane a day, and augmented only by a few laboratory boys, this organization reached a grinding capacity of 7,000 tons a day. Considering the work on the juice bench alone, this meant an increase of from 700 to 900 samples a day on each of which several determinations were made. From every car of cane, the crusher juice and dilute juice had to be analyzed. The increased burden placed on the juice bench had reached such a point that accuracy suffered and the strain on capable men was terrific. The simplest solution might appear to be to add another chemist, but in actual fact, this would have meant the addition not only of a bench chemist but of several assistants, a bench, a polariscope, and all the apparatus required to give the new bench man proper facilities to handle a third of the work. Here was a definite problem that needed investigation, and the solution depended primarily on a common-sense approach and the employment of elementary mathematics.

INVESTIGATION showed the data for the crusher juice were a function of those for the dilute juice. Unfortunately, this was not a simple function, but by the use of graphs, it was possible to translate the data of one juice to those of the other. Thus we found that instead of setting up an extra bench with the attendant expense, we were able to examine 450 samples instead of the 900 that had previously been required, and the addition of a clerk to the office staff made it possible to give as full a report on each car of cane as had previously been given. The subject of "Hydrogen Ions" recalls another problem that was purely the function of the control laboratory. The advantages of H-ion control, over alkalinity-acidity control, seemed evident but an immediate switch from one system to the other was, of course,

impracticable. There were five stations in this plant where alkalinity had been run to guide the work of the station. To change to pH control, it was necessary to establish a relationship between pH determinations and alkalinity determinations, so that for several months both pH and alkalinity were determined; the correlated data obtained made it possible to substitute one for the other.

A third most obvious use for research in a control laboratory, and now the pure scientist and academically inclined may take issue with me in calling this "research," is a study of the losses occurring throughout a production system. The sugar world has for many years balanced its books with great accuracy. Every ton of sucrose which enters a mill must be accounted for, either in bags of sugar, molasses, bagasse, or waste. Since men are human, and since accidents occur, this balance is never perfect, but the undetermined loss has been reduced in the average well-operated mill to about 0.2%. In Guanica this loss would have been about ten or twelve tons a week—a value of $200.00 to $250.00. By employing extra men and instituting an extremely rigid system of control, this loss, over a period of time, had been reduced to about two to four tons. Suddenly, the laboratory found that the undetermined loss had jumped to an appalling figure in the neighborhood of ninety tons a week—say $1800.00 worth of sugar, which was going no one knew where. That the laboratory itself was under suspicion of inaccuracy, which you will all understand, is rather an understatement of facts. Every superintendent and foreman was certain that such quantities of sugar could not be going down a sewer, be stolen from the plant, or lost through inversion unbeknown to the plant operators, but within ten days the loss had once again been reduced to normal and this again, I insist, was the result of a type of research. The actual solution to the problem was found to be the opening of a return valve which had been plugging a siphon-catch-all. A highly concentrated sirup had been shooting out of the plant at a tremendous rate at fairly wide intervals. That all that was required to save this sugar was to break the plug in the return line, does not demote the investigation from the classification of research.

ANOTHER type of research is the type of work which results in increased sales. My experience here has been rather along the lines of paper production than in the sugar field, but the same type of problem to some extent does arise for every product. Increased sales may come about frequently from an examination of the complaints

which salesmen encounter from dissatisfied customers, and it is usually the function of the laboratory to find out, for example, why a paper is not as opaque as in a previous shipment; why it takes a poorer offset; why it results in poor printing; or, in the case of glassine, why a number of pin holes have developed or why it cannot be pasted in the usual wrapping machine. An effort to answer these questions results in constant improvement in plant operation and in class of product, and must result, eventually, in lowering sales resistance. Even in the sugar world, a sugar which filters easily in American refineries can be moved more easily than one which gives the refiner headaches, and it is the business of the control laboratory—whether in paper or in sugar, or any other product—to make it easy to sell the plant's output.

A fifth function of the laboratory, which may properly be classed as "research," is the setting up of standards, and this is often more difficult than appears to the layman. At this particular moment, I suppose many of you have been drawn into the great activity which has been caused by Repeal. I suppose that no question in recent years has been more difficult to solve than the evaluation of alcoholic beverages. To set up standards against which products of distillers may be measured is very definitely an industrial research problem, and yet it is one that will take great effort and a long time if the final standards are to mean anything, and it is a grave question if the time and effort will be repaid to the investigator. There is no doubt but that such standards would benefit the industry, and certainly the public, but the firm which spent money for the investigation would probably profit no more than its neighbor which has spent nothing. It is for such border-line problems that we require foundations of a semi-public nature.

So far, I have discussed the type of problems, I must admit, of only my own limited experience, which may be considered definitely industrial problems. And now for a moment, if you will bear with me, I would like to talk about the qualities of the chemist most fit to conduct industrial research. I have tried before I came here to list these qualities in order of importance, but without success. It seems to me that all of these qualifications are necessary and essential for successful work and that the ability of the chemist who attempts research will be terrifically impaired if he is not well balanced in at least the few qualities which I feel are of fundamental importance. Common-sense, which we speak of so glibly, observe so rarely, and define so inaccurately, is fundamentally important. The most knowledgeable chemist who cannot put his idea into clear English which makes common sense, and who cannot judge his results from a common-sense point

of view, will certainly fail to produce valuable results. Moral courage is of the utmost importance. A real piece of work tries the patience of a man to the breaking point and it requires a certain doggedness to push on in the face of repeated failures. This moral courage is called upon again and again in research work. The research chemist must scrap results which proved promising, and then suddenly failed, and it takes real courage to face the sad, unexpected facts and begin again on an entirely new line of approach. The chemist without courage will fail as surely as the army without food.

IT is called on so constantly, I thought for a while of placing imagination as a primary quality essential to the man who does research. It requires imagination to see a method of approach, a method of attack, to interpret results; to evaluate these results in terms which will lead to speedy success. It requires even more imagination to remain open-minded and to take advantage of unexpected results. I recall an effort to produce a paper of peculiar specifications to meet the requirements of a large customer. Early in the research, it was found necessary to make a number of cooks of raw material, and these involved a considerable period of time. In an effort to save time, a laboratory method was finally evolved which reduced what had been originally a cooking period of seven hours to three minutes. I don't know whether it required a great deal of imagination to see that this incidental result of an investigation was of far more value than to produce successfully a product which would satisfy one customer, but I do know that this type of discovery—the incidental discovery—is frequently overlooked because a man's mind is so set on one aim, that he may not permit his imagination freedom to see all the possibilities which arise in a problem. Integrity is of outstanding importance to the chemist. To face facts honestly, not to explain away too readily the variation from the expected, is not as easy as it might seem. To face pleasant facts with an open-minded skepticism is essential. To admit mistakes and to admit unanticipated results quickly, without undue regret, is to throw away a burden which hampers the work of many a good research man. More difficult still is it to stand by a fact which one's dogmatic preconception has believed impossible, but the strong fibre of integrity, which is essential to successful research work, bolsters this attitude toward experimentation.

That knowledge of one's subject is essential is obvious, but it is not so obvious to know exactly what falls into the field of one's subjects.

Physics, mathematics, and chemistry are obvious, but a good background of detective stories is not bad preparation for research work. A knowledge of where to get detailed information, what books, what bibliographies are available, is necessary, in order to save going over ground that has already been measured. The knowledge that all our knowledge is limited, that we may step into a new field at any moment, should be part of the make-up of a chemist. The relation of a chemist to his community is, in itself, a field for investigation. Probably every man must decide for himself just what he owes the state, the profession, his employer, and himself. The line between a selfish attitude and an unselfish one is not easily fixed. The research chemist who fails to take out a patent and thus make available at least the outlines of his new knowledge may not be selfish; it may be that he owes more to his employer than he does to his state, and that the probable benefit to the state of a patent may be badly offset by the detriment it would do his employer. The debt to the profession as a whole is a little different. The constant report of progress along academic lines made available through the publications of chemical societies cannot be paid for in any adequate cash settlement, and the only return the chemist can make for the great debt we owe to our predecessors in the scientific world is an honest service in the profession and an active service for the profession in one of such societies as the two which make this meeting possible.

THE research chemist frequently works on his own. How then is he to dispose of his idea? After all, at the conclusion of a successful piece of research work, all the chemist has to show for it is an idea; something more than a theory, but not a piece of tangible merchandise. He is entitled to be paid and well repaid for his research work. The basis of any sale of an idea is confidence. We cannot expect capitalists to invest time and money in an intangible product unless a great part of it can be explained and demonstrated in advance of the sale, and yet this very explanation and demonstration constitutes probably ninety per cent of what the research man has to sell. Of course, there is no easy answer. First of all, do not deal with anyone that you cannot fully trust, and to protect your professional associates, publicize those firms whom you have found unscrupulous in their dealings with you. It is sometimes possible to put an idea in escrow so that it does not become the property of the investor until he has

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The British Institute

By James Ogilvie

Address before the Niagara Section, American Institute of Chemists, outlining the history, policy, and benefits to members of the British Empire's organization of qualified chemists.

THE Institute of Chemistry of Great Britain and Ireland with headquarters in London where it maintains its offices, library, and laboratories has grown from humble beginnings until now it registers the names of two thousand Fellows and four thousand Associates from all parts of the Empire who are entitled to use the much coveted letters "F.I.C." and (to a somewhat less extent) "A.I.C." after their names. What proportion of all British chemists these six thousand represent, I am not certain although I would venture to say it probably covers 75% of all bona fide chemists engaged in industrial and governmental activities and 60 to 70% of all academic chemical appointments. Its capital exclusive of buildings is approximately $140,000. Annual expenditure, $70,000. Fellowship and Associateship annual dues, $15.00. Founded in 1877, this Institute was incorporated by Royal Charter in 1885. In essential features its Charter is identical with that of The American Institute of Chemists.

My own opinion is that the Institute has from its inception recognized that the finished product of the Universities, whether he be a B.S., M.Sc., or even Ph.D., is not necessarily adequately trained, particularly in practical work, to assume his position in industry and especially in public practice. So it decided to set up its own standard of excellence, the attainment of which would command the respect of both industrial and governmental bodies. This was especially true in 1877, the year of its foundation, which incidentally was one year later than the founding of the American Chemical Society.

In the year 1800, no university had provided means or accommodations for the training of chemists. Many who subsequently attained fame like Liebig and Frankland (in 1840) began their careers as students by the toilsome and relatively barren route of apprenticeship to an apothecary. The first laboratory for the teaching of chemistry was opened in Edinburgh in 1800–1807. Far more influential was that of

Liebig at the University of Giessen in 1824. The example was followed slowly. In 1840 Liebig found Berlin without accommodation for training students. In France even in 1870 Wurtz reported only one laboratory equipped for instruction. In the United States the first non-professional institution to establish a Chair of Chemistry was Princeton (1795) and the first laboratory for instruction was that of the Lawrence Scientific School in 1848. May I recall the words of the President of Williams College about 1890, when the young and energetic Professor of Physics and Chemistry, Ira Remsen, asked for a laboratory in which to give practical instruction. "You will please keep in mind, sir, that this is a College and not a Technical School. The students who come here are not to be trained as chemists. They are to be taught the great fundamental truths of all sciences. The object aimed at is culture, not practical knowledge."

FOR those who pursue courses in science as a part of general culture, I am heretic enough to believe that practical work in the laboratory is not essential, but we must bear in mind that the aim of the Institute was not merely cultural but technical and this brief history will show how inadequate must have been the facilities for practical, not to mention technical training of chemists within living memory. The Institute therefore decided to admit to its ranks only those who had passed its examinations, first for the Associateship and then for the Fellowship. It recognizes only certain Colleges, Universities, and Technical Schools for the training of chemists and always insists on mathematics and physics as cognate subjects. The Intermediate Examination for the Associateship is (by general admission) more difficult to pass than that of any of the British Universities' Honors degree pass examinations in Chemistry. It consists of two theory papers of three hours each in general and organic chemistry and five days of practical work. Also examination in French and German. Fee $50.00. It is held at various academic centers throughout the country twice each year and also at the Institute's own laboratories in London—average passes 60%. The Examination for the Fellowship requires specialized training in any one of the following: Inorganic, Organic, Metallurgical, Biological, and Foods and Drugs. This implies besides inorganic and organic chemistry an examination in Pharmacology, Toxicology, and knowledge relative to the laws of poisons. I shall refer to it later. The average pass is 60%; Fee $50.00. Associates sit the Final Examination for Fellowship not less

than one year after passing the Associateship. The Institute constantly encourages Associates to sit for the Fellowship.

By thus setting up a high standard of qualification, Fellowship in the Institute is much coveted and its register has been graced with the names of nearly all British Chemists of recent fame. Employers seeking adequately trained men have therefore no difficulty in discriminating between professional chemists and mere laboratory assistants.

Since the war, which dislocated the studies of so many students, the Institute has relaxed somewhat in its regulations so as to permit to the Associateship without examination Honors Graduates in chemistry of several of the highest grade Universities. This step was taken rather reluctantly but it was almost necessary under the circumstances, and of course, besides broadening its ranks, it was a financial gain to the Institute. However, it weakened somewhat the prestige of the A.I.C. Nevertheless, the F.I.C. can be acquired only by examination except in a few cases of very great distinction.

PERHAPS the greatest concession won by the Institute is in the domain of public analysts. The British Board of Trade requires that every chemist holding the appointment of City Analyst shall be a Fellow of the Institute and shall have passed the Fellowship examination in the final examination in the section called "Foods and Drugs." Moreover, the Institute has repeatedly called the attention of public bodies to the encroachments of local Medical Officers of Health in performing chemical services which they are incompetent to perform and which are rightly the duty of the City Analyst specially qualified for such work. In cases where public bodies offered salaries for official chemical appointments which were considered wholly inadequate by the Institute for the type of service required, the Institute has not hesitated to circularize all Fellows suggesting that no application be made for such appointments. These suggestions have generally had the desired effect in maintaining the dignity of the profession.

In July 1933 the Association of Consulting Chemists and Chemical Engineers submitted a "code of fair competition" at Washington under the N. R. A. (Incidentally the N. R. A. has recommended that this code be withdrawn.) Although it is obvious from the meaning of the act that chemists are neither permitted nor competent to submit a code the Institute (British) has commented upon it as follows: "While this code is interesting and conveys some useful suggestions regarding

professional procedure, it differs from the ethics generally accepted by professional men in Great Britain. In Great Britain and most parts of the Empire advertising for practice and the giving of certificates for advertising purposes are discouraged. Moreover the code appears to suggest that it is permissible for a member of the profession to undertake what is usually described as "cover" work—that is, work that is undertaken for an unqualified person or agency which will in all probability issue a report as if he or the agency had undertaken the work."

THE Institute maintains an Appointments Register. Names of Fellows and Associates who are available for appointments are kept at the offices of the Institute. The fee for such registration is $3.00 per half year. Fellows and Associates are invited to notify the Institute of suitable vacancies for qualified chemists. Lists of vacancies are forwarded twice weekly to those whose names appear on the Register. It also maintains a Register of Laboratory Assistants who have passed approved examinations. The Institute registers the names of 700 students who have entered upon their technical education with view to becoming Associates. Fee, $3.00. Founded in 1920 as a memorial to Fellows and Associates who died in the service of their country in 1914–1918, the "Institute of Chemistry Benevolent Fund" has slowly increased in its service to those of its ranks who have been less fortunate in health or finance or to widows of members who are left with children, etc. It obtains its voluntary subscriptions and donations entirely from its own members and now, I believe, totals $20,000 in principal and an income of $7,000 annually which is given both as grants to widows or loans to members who are pecuniarily embarrassed. It has always appeared to me that we chemists are philanthropic to every worthy cause but through lack of proper organization, those who have been less fortunate in our own profession have received but little help from their co-professionalists. For this reason I cannot conceive of any more ideal way of disposing of our fortunes than to put them at the service of the Institute which could then put the funds at the disposal of those deserving members of our profession who have become incapacitated in scientific service, or through bravery, or to the widows of those killed in scientific action.

There remains to be discussed the relationship of the Institute to governmental activities, its policies with regard to administration, legislation, and education. The question is: "What part may we

claim to play in the State and in the general life of the community?" This phase of scientific activity is limitless in its controversiality and just about as dangerous as dynamite. Very great disservice has been done to the cause of science by extravagant claims made by individual men of science. Some of these, impressed by the mighty achievements of applied science and confident that still greater boons would be showered on mankind through the advancement in scientific knowledge, became impatient at the thought that in the ranks of science there is "knowledge without power and in politics power without knowledge" and they demand for men of science a special, if not supreme, position of power in the government of the country and our planned economy. This, in my opinion is a product of minds distorted by over-emphasis of the scientific mood. The same sectional demand has been made by lawyers and business men. It is quite true that in the planning and execution of schemes of a technical character, schemes for the conservation and economic utilization of natural resources, in the practical work of national defence, in the control of the purity of food, in the laws relating to poisons, in the fostering of chemical education in primary schools, in the preservation of health, the claims of the Institute for representation on the corresponding Boards and Councils are indisputable and have been very largely recognized. However, we have no right to claim for the man of science, as such, a special place in the work of government, in the multifarious tasks of adjusting the conflicting claims, prejudices, and aspirations of men. Whereas we may hope to find agreement among chemists regarding chemical law there is no reason to expect any unanimity among them in the domain of civil legislation.

IN the work, more especially of administration, whether of industry or government, one could readily give the names of members of the Institute who have risen to positions of eminence both as administrators and legislators but the problems are too great to be solved by merely emphasizing *one* of the factors of human nature. "The world consists not only of electrons and radiations but also of souls and aspirations." We are beginning to realize that the dangers to which our present civilization lies exposed may be due to the neglect of the ethical rather than of the scientific values. I am afraid that one reason for our failure to take a more conspicuous place in administration and government is to be found in the narrow and too highly specialized nature of our training and outlook. I believe that although the In-

stitute could do more toward encouraging the Universities to instruct a wider scientific outlook by providing instruction in the philosophy of science, nevertheless the scientist, in order to fit himself for the tasks of administration and government, must submit himself to a wider and more liberal training than is demanded of the specialist.

Permit me to quote the words of Owen D. Young of the General Electric Company when approached by a professor of engineering for a few words in commendation of the claim of the engineer to play a greater rôle in the community:

> "If the engineer is to take the place to which he aspires, and to which, perhaps, he rightfully belongs, he must add to his technical training certain things which both he and the technical schools have heretofore not emphasized; in fact, things which they have heretofore affirmatively depreciated. The technique of pure science or pure engineering, like any highly specialized technique, withdraws itself automatically, by reason of its specialization, from participation in broader movements.
>
> (The engineers) "think that it is enough to be a great engineer. In a sense, it is, but it does not qualify them to take a leading part in society. They must add to their engineering qualifications something more. The engineering schools have been deficient, in my judgment, in training their men for that 'something more.' They have not emphasized the importance of social and political relationships, and not until they do create great engineers with the overlay of these commanding social qualities will the engineer take the place which it is his ambition to do. . . . Over and above the technique of the skilled craftsman, in any art, you must educate and develop a man. When you do, whether he be lawyer or engineer or preacher or merchant or painter or author, he will take his place in the major activities of life."

I cannot believe that it is the duty of statecraft to make humanity fit for science, but rather it should be its duty to make scientific endeavor and all else fit for humanity. We shall, I am sure, gain that higher place in the councils of government to which we can justly lay claim, if we will recognize that science is not the only human value—that a rich humanity is as much an aspect of nature as oxidation or catalysis.

Licensing and the Bar*

By George W. Wanamaker

The new system of "Integration" for regulation of legal practice, recently adopted in several states, compared with the British system and with older regulations in the United States by statute.

WHILE the system of law used in almost all of the states of the union is derived from the Common Law of England, yet the American method of obtaining admission to practice at the Bar is different from that employed in England. In England the Bar is substantially self-governing. It determines who shall begin to practice law and likewise decides when a lawyer is to be disbarred. In most of the states of the union admission to the Bar is determined by statute. So far as New York State is concerned, the Court of Appeals, which is the highest tribunal in this state, determines the qualifications that must be fulfilled by every applicant. When an applicant has fulfilled these requirements and has passed a Bar examination, he is admitted to the Bar. If thereafter his conduct is questionable, it is the Court which disbars him, although it may happen that a Bar Association takes an active part in the proceedings leading up to the final result. It can therefore be said that to some extent the right of a lawyer to practice in this state depends upon his conduct. It cannot be said that the profession as such has any control over the number or even over the qualifications of those seeking admission.

In approximately ten states of the union a more modern system has been devised. In those states the Bar has gone through a process called "integration." Those who do not favor the new idea call it "involuntary incorporation." Whatever the name, the system is that the right to practice law depends upon membership in a corporation which is created by the State to include all those who thereafter shall practice law. An annual license fee is required and no person is allowed to practice law in a year for which he cannot display a license. In those states the profession, as such, that is the integrated Bar, has become

* Presented at the Symposium on Licensing of the Niagara Chapter, American Institute of Chemists, Niagara Falls, N. Y., March 10, 1934.

very powerful in that it speaks with one voice and in that every lawyer belongs to the corporation. Voluntary State Bar Associations traditionally have included only a very small percentage of admitted lawyers. In New York State, for example, our State Bar Association probably includes about thirty per cent of lawyers eligible for membership and so far as the annual conventions are concerned, probably only about two per cent of the total membership ever attend.

In states which already have this integration of the Bar, it is found that a much closer control can be exercised over the conduct of attorneys. The corporation being well supplied with funds, can maintain proper offices, adequate facilities, and efficient methods of investigation of complaints. It is possible to pay officials for their services and progress does not depend upon volunteer efforts. Complaints are apt to be heard by a body not closely related by friendship with the persons involved. To put the matter concretely, you can imagine how unpleasant it is for the Grievance Committee of the Bar Association of Erie County to investigate and act on a complaint against a brother lawyer who perhaps has been personally known and intimately acquainted with every member of the committee for many years. Take that same complaint before a committee of an integrated Bar, represented by a committee which is interested only in the facts and not in the human relationships, especially those involving sympathy and friendship, and you can visualize what would happen.

IN this state the movement to integrate has been resisted and this by men whose ethics and conduct cannot be questioned. Some of them feel that integration approximates unionization and that to a considerable extent it detracts from the dignity of the profession and makes it resemble more a business than a profession. These high-minded individuals feel that by increasing the efficiency of volunteer organizations, all of the good results can be accomplished and the bad ones avoided. On the other hand, those who are in favor of integration point out that it is fatuous to hope that a volunteer organization which a man may join or not join as he pleases, which depends for its results on officers and committees who receive no pay and whose personal business is therefore their first and natural outlook, will ever be successful or can ever cope with the evils resulting from the vast increase in the number of lawyers and the general decline in the grade of lawyers.

If integration through involuntary incorporation is not the answer, then it is probable that the solution lies some place midway between.

At any rate in almost every voluntary association of lawyers there has been a new impulse toward efficiency in the direction of a house cleaning in the profession, as well as a strengthening of confidence to prevent encroachment by outsiders. If there are evils within the profession, it is for the profession to perform the unpleasant duty of effecting changes. If there are those from the outside who trespass upon the domain of the law through unlawful practice, it is for the profession, having thus made its own house clean, to erect the fences against these aggressions.

The experience of the lawyers will scarcely be interesting to chemists unless the chemist can discover some lesson or some warning in what has happened and is happening to the legal profession. If the chemists can discover some means of assuring themselves and the public that no one shall have the right to practice as a chemist unless he shall possess the necessary qualifications of education and training, together with the cultural background and the character that belong to a learned profession, and if they can find a way to oust from their profession members who shall have proved themselves unworthy of the name and the honor, they will lead to any result but failure. Nowadays every movement must have a broad economic and a social reason. That reason you can find in any reform that you attempt on the simple basis that poorly trained, inadequately educated, uncultured, and spineless individuals will never do any good to the public through the practice of the profession of chemistry. They will hurt themselves, they will damage their profession, but more than that, they will cost the public money.

RESEARCH

(*Continued from page 56*)

fulfilled certain obligations and you, the researcher, retain the essential secrets of your process, but even this is not easy, and I would like to offer tentatively a possible solution for this constant problem which faces research chemists. I would suggest a board created by such organizations as the American Chemical Society and The American Institute of Chemists, though, perhaps, it is work for The American Institute of Chemists to initiate, which can impartially review the work of a research chemist who wishes to sell it to a capitalist, examine his claims and report back its findings. Such a board could be supported by sharing in the proceeds of invention and take the responsibility for the accuracy and impartiality of its reports.

Should Chemists Be Licensed?

By Arthur J. Norton, F.A.I.C.

Address delivered as part of the symposium on licensing of the Niagara Chapter Meeting, March 10, 1934, setting forth some objections to the licensing proposal.

AS a science, chemistry is highly and efficiently organized. There has been built up a background of available knowledge and a system of cooperation unparalleled in any other science. At the fall meeting of the American Chemical Society over three thousand of the eighteen thousand members gathered from all over the world for the interchange of knowledge. Dr. Lamb, from Cambridge, Mass., presented an award for work in pure science to Dr. Spedding from California, and some of the outstanding papers were read by chemists from Germany, Switzerland, and England. No one can question the part the American Chemical Society and similar foreign organizations have played in the advancement of chemistry as a science—and, as a result, in its benefit to the public at large. As an industry, chemistry is again highly organized. Starting in this country as an emergency project protected by the world war from encroachment by the already highly organized European industry, a large well organized industry has developed. The Chemical Alliance is a cooperative organization to represent the industry in its relations with the government and with the public. Throughout the industry are specialized groups such as the National Paint, Varnish, and Lacquer Manufacturers' Association which regulates competition within the industry. No industry in the world has less of the so-called wasteful competition in manufacturing. The chemical industry as a whole withstood the trials of the depression remarkably well. As a result of its organization there were very few instances of the destructive practices so common to other lines of manufacture. The results are obvious—a powerful industry employing many people, giving to the country new standards of living and comfort.

As individuals, chemists, except for the Institute of Chemists, are entirely unorganized. It is true they built up both the organization for the advancement of the science and the great organized chemical industry as individuals. And it is also true that they have benefited

directly as a result. But, as we saw in our discussion of contracts, the individual is under a distinct disadvantage in dealing with a highly organized group. There is a tendency of the organized group to limit the usefulness of the individual to the public by forcing his services into restrained channels for immediate benefits to themselves. Licensing is generally opposed on two counts: first, that the chemist does not come in direct contact or give direct benefits to the public as do the doctor and lawyer, and second, that there are too many unenforceable laws on the books already.

WITH regard to the first, the consulting group of chemists do serve the public directly, and the public has bought many thousands of dollars worth of worthless stocks as a result of signed statements of professed "chemists." Not only stocks, but arsenic free toilet paper and vitamin tested products are familiar examples of the exploitation of the term "chemist." Industrialists are better able than the public at large to judge a man's ability, but here again many costly mistakes have been made. Many "magicians" and super salesmen get jobs for which they are not qualified, with resulting economic waste which is eventually borne by the public. The second objection is more serious, and is one of the reasons for this symposium. We could readily ask for an amendment of the engineers' licensing law to include chemists. The methods of enforcement, the classifications and the general methods of operation present an interesting but not an insurmountable problem.

Most of us object to regimentation—inherently, as a part of our American training and birthright. But the knight of the old days of chivalry was unable to cope with organized groups as the world became more populated. When the chemical industry was young and any of us starting as individuals could muscle in and become a part of it, organization was not necessary. But today, when most chemists are salaried men and the field for individual growth is full and even discouraged by government competition, in order to maintain that freedom and protect that individuality we all cherish, we must cooperate and present a united front.

The merits of centralization of this type are not the subject of this discussion. We must remember the stifling effect of the old monopolies of the European chemical industry on the growth of new industry and the improvement of old. All such organization defeats its own purpose if overdone.

INSTITUTE NOTES

National Council

February Meeting

The one-hundred and ninth meeting of the Council of The American Institute of Chemists was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on Thursday, February 15, 1934. In the absence of President Henry G. Knight, Dr. M. L. Crossley presided. The following Councilors and Officers were present: Messrs. Breyer, Crossley, Jackson, Moody, Morgan, Snell, Taggart, Zons, and Miss Wall.

In the absence of Secretary Howard S. Nieman, Miss Vera F. Kimball, Assistant to the Secretary, was present. Upon motion made and seconded, Miss Kimball was authorized to act as Secretary pro tem. The minutes of the previous meeting were approved as sent to the Councilors.

The Treasurer submitted his report showing cash balance on hand as of February 15, 1934, of $354.54. Upon motion made and seconded, the Secretary was requested to send a follow-up letter on March first to those members who have not responded to the recent request for back dues. Dr. Snell was requested to confer with the Secretary regarding the wording of this letter.

The report of the Committee on Nominations was read, and after several suggestions from the Council, the report was accepted for submission to the membership. Dr. Crossley reported informally for the Jury of Medal Award, which had not yet reached a decision.

The Secretary pro tem reported that Dr. Breithut found it impossible to serve as Chairman of the Speakers' Bureau. Upon motion made and seconded, Mr.

Quigley was appointed to serve as such chairman.

Acknowledgments from Mrs. Richard B. Mellon and family, and Andrew W. Mellon of the Institute's resolutions concerning the death of Richard B. Mellon, were read. A letter from Dr. Charles H. Herty, with further reference to the Institute's code, was read.

A letter was read from Oscar Kohn asking information about registration for the CWA. The letter was referred back to the Secretary with suggestions for answer.

The financial condition of the Institute was discussed at length. Upon motion made and seconded, Miss Kimball's offer to take a reduction in salary was accepted with thanks. The question of licensing of chemists was discussed.

Upon motion made and seconded, the Chairman was authorized to appoint a committee to formulate a bill for the licensing of chemists in the State of New York, using as a basis for their work the records of the preceding committee. Walter J. Baëza, Frederick Kenney, and Roy H. Kienle were appointed to this committee.

The following new members were elected:

FELLOWS:

Kenneth H. Klipstein, *Research Chemist*, Calco Chemical Company, Bound Brook, N. J.

DeWitt Dunn Sager, *Assistant Research Chemist*, Picatinny Arsenal, Dover, N. J.

Daniel P. Woodson, Jr., *Research Chemist*, Calco Chemical Company, Bound Brook, N. J.

Dr. G. M. J. MacKay of the American Cyanamid Company was proposed for membership as a Fellow and accepted on Dr. Crossley's recommendation, subject to the usual procedure.

March Meeting

The one-hundred and tenth meeting of the Council of The American Institute of Chemists was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on Thursday, March 15, 1934. President Henry G. Knight presided. The following Councilors and Officers were present: Messrs. Crossley, Kenney, Morgan, Nieman, Snell, Taggart, Zons, and Miss Wall. Mr. Alan Porter Lee, Mr. W. J. Baëza, and Mr. Karl M. Herstein were also present by request.

Mr. Herstein explained, as he understood them, the reasons for the call of the special meeting of the Institute and a general discussion of the situation was held.

Mr. Baëza reported in detail concerning his visit to the meeting of the Niagara Chapter, which was devoted to the question of licensing of chemists, and he commented upon the various speeches made at that time. Mr. Baëza stated that it seemed to be the consensus of opinion of the speakers, as well as of others present at the Niagara meeting, that it would be inadvisable to offer a licensing bill at the present time, and it was suggested by some of the speakers that the result might be accomplished by amending the Penal Code to cover the situation. The matter was discussed at length by the Council, and upon motion made and seconded, the Committee on Licensing was enlarged by the appointment of Mr. Arthur W. Burwell, and the Committee was requested to prepare a suggested bill and submit it at the next meeting of the Council.

Mr. Alan Porter Lee was present to take part in a discussion relative to his engagement as Editor and Manager of THE CHEMIST, after which discussion the Secretary was directed to prepare and

sign a contract with Mr. Lee in behalf of the Institute, engaging him as Editor and Manager of THE CHEMIST.

Dr. Snell reported upon a hearing on the code submitted by the Commercial Testing Laboratories, which will be held on March 22nd. Mr. Kenney of the Membership Committee reported that his Committee has consulted with several suitable parties to conduct a membership drive.

The Treasurer presented his report, showing a cash balance as of March 15, 1934, of $211.01, and upon motion made and seconded, the report was accepted and ordered filed. The Secretary reported that since the last meeting of the Council, 32 Fellows, 6 Associates, and 1 Junior had paid their dues to date. The President appointed Dr. Zons and Miss Kimball as tellers to count the nomination ballots.

On motion made and seconded, the Secretary was directed to advise Mr. Gordy of the deep appreciation of the Council of his successful efforts in editing THE CHEMIST, particularly for his continuance as Editor without remuneration during the last months; and its regret that he finds it impossible to continue in this position.

The following new members were elected:

FELLOW: David F. Smith, *Professor*, University of Buffalo, Buffalo, N. Y.

ASSOCIATES:

Charles H. Benbrook, *Research Chemist*, Calco Chemical Co., Bound Brook, N. J.

Alfred G. Hill, *Research Chemist*, Calco Chemical Co., Bound Brook, N. J.

David Henry Wilcox, Jr., *Analytical and Control Chemist*, Amalgamated Dyestuff and Chemical Works, Newark, N. J.

Frank Spitaleri, *Perfumer*, Felton Chemical Co., 599 Johnson Avenue, Brooklyn, N. Y.

STUDENT: Frank R. Fabiani, *Pharmacist*, Whelan Drug Company, 2001 Mott Avenue, Far Rockaway, L. I., N. Y.

Dr. Crossley presented the following applications:

FELLOWS:

Alfred L. Peiker, *Research Chemist*, The Calco Chemical Co., Bound Brook, N. J.

Roy A. Shive, *Research Chemist*, The Calco Chemical Co., Bound Brook, N. J.

Andrews C. Wintringham, *Chemist*, The Calco Chemical Co., Bound Brook, N. J.

ASSOCIATES:

Frederick H. Adams, *Research Chemist*, The Calco Chemical Co., Bound Brook, N. J.

Eugene Clifton Medcalf, *Research Chemist*, The Calco Chemical Co., Bound Brook, N. J.

Wendell P. Munro, *Research Chemist*, The Calco Chemical Co., Bound Brook, N. J.

George L. Royer, *Research Chemist*, The Calco Chemical Co., Bound Brook, N. J.

Upon motion made and seconded, the above mentioned applicants proposed by Dr. Crossley were elected to membership, subject to the action of the Committee on Qualifications.

The application of Benjamin Peltz to be raised from Junior to Associate was granted.

Washington Chapter

The February meeting of the Washington, D. C., Chapter of the American Institute of Chemists was held in Baltimore, Maryland, Saturday, February 10, 1934. In the afternoon the plant of the U. S. Industrial Chemical Company at Curtis Bay was visited. At 6:30 P. M. a group dinner was served at Miller's restaurant. Following the dinner an address on "The Institute of Chemistry of Great Britain and Ireland" was delivered by Mr. B. W. Clark, A.I.C. Following the dinner a business meeting was held.

Niagara Chapter

The Niagara Chapter Meeting, held at the Red Coach Inn, Niagara Falls, New York, on March 10, 1934, was featured by a symposium on the licensing of chemists. In introducing the subject to the members and guests, Mr. William J. Cotton, Chairman of the Chapter, outlined the aims which the Chapter had in view, namely, the presentation of the pertinent facts with regard to the licensing of chemists, how licensing would affect chemists, etc., followed by an inquiry into the situation with regard to allied professions. Government would then be invited to state how it felt about professional licensing, what mechanism would be followed in case chemists were to be licensed and how a newly licensed profession would be regarded in the eyes of legislatures and of the law. CHARLES F. SMITH of the U. S. Rubber Reclaiming Co., presented a report on a recently formed organization entitled "Federation of Architects, Engineers, Chemists, and Technicians," which has a unit with headquarters in Buffalo. He read the preamble to their constitution, citing the important points. Mr. Smith heartily supported the general attitude of the A. I. C. toward this organization; *i. e.*, that of sympathy and tolerance but non-cooperation. It was estimated that about ten per cent of the local membership are chemists. JAMES OGILVIE, a member of the Institute of Chemists of Great Britain and Ireland, described the workings of that organization. Mr. Ogilvie's address is published in full in this issue of THE CHEMIST.

ARTHUR J. NORTON, General Plastics Corporation, read a paper entitled "Should Chemists Be Licensed?" which is also published elsewhere in this issue. GEORGE W. WANAMAKER, Secretary of the Bar Association of Erie County, New York State, spoke on the status of the Profession of Law under the present and proposed systems. His paper also is presented in this issue of THE CHEMIST. HARVEY P. HOFFMAN, M.D., presented the views of the Medical Profession. His remarks will appear later in THE CHEMIST.

ARTHUR W. BURWELL of the Alox Chemical Corporation, reviewed the situation, commented on the remarks of the previous speakers and presented ideas relative to a model bill for chemists, if such a bill were ever called for. In the first place, said Dr. Burwell, we should not be caught in the position of having licensing thrust upon us—more harm can be caused by getting off on the wrong foot than can be righted by years of patient endeavor. A written code providing for licensing should be as simple as possible, preferably setting up only two grades of chemists, and keeping the fees just as low as possible. There must be dignity to our status, nothing must be done to give chemists the appearance of organizing a trade union.

With regard to the examinations necessary, it should be made possible at the outset to issue certificates to practicing chemists who have already been in the field some time, as it would obviously be impossible for all of these men to take the current examinations. LAWRENCE G. WILLIAMS, State Senator, emphasized the necessity of building up a case of public interest. It would be quite improbable that a legislative body would consider any profession worthy of legal assistance in the shape of licensing, unless it could be shown that that profession were vitally linked up with the public good in some way.

He counselled the Institute to remember that once government is "in," it always stays in. Furthermore, New York State is often considered a leader in things legislative. Suppose licensing should become the practice and should in time be adopted by other states. There might be conflict between the requirements here and somewhere else which might make it difficult for a chemist to transfer his place of occupation from one state to another. Then again with a license system it might even be necessary to go to the expense of keeping what might be termed a lobby on hand all the time to watch over the interests of chemists in legislative halls.

WALTER J. BAĔZA, Chairman of the Legislative Committee of the Institute, told of the feeling that the preceding committees had had that licensing of chemists was a thing that was bound to come sooner or later. He stated that opinion among chemists was far from unanimous on this matter but that the real problem was to be found not in licensing per se, but in making it illegal for a man who is not a bona fide chemist to call himself a chemist. Mr. Baëza showed that in view of the many ways in which a chemist and his work actually do touch human life it should be an easy matter to make out a case.

New York Chapter

On Monday evening, April 9th, the New York Chapter held a joint meeting with the North Jersey Section of the American Chemical Society at the Hotel Winfield Scott, Elizabeth, N. J. The meeting was extremely well attended. The success of this locally sponsored joint meeting may hopefully set a precedent which will become more widely established.

The first business of the Chapter was the reading of the chapter office nominations for the coming year, which were as follows:

For Chairman:
- Ephraim Freedman
- B. H. Knight

For Vice-Chairman:
- Jerome Alexander
- Calm H. Hoke

For Secretary-Treasurer:
- Walter J. Baëza
- D. H. Jackson

For Representative to National Council:
- R. A. Baker
- Karl M. Herstein

For Members of N. Y. Chapter Council (3 to be elected):
- L. W. Bass
- J. O. Handy
- J. F. X. Harold
- C. D. Ingersoll
- F. A. Kenney
- Wm. W. Winship

No further nominations were made from the floor.

The meeting was addressed by Mr. George A. Perley, Research Director of Leeds & Northrup Co., on "The Hydrogen Ion in Industry," and by Walter J. Baëza, F.A.I.C, on "Research and the Chemist." Mr. Baëza's address appears in full in this issue of THE CHEMIST.

The meeting was preceded by a reception and followed by music and entertainment. Mutual expression of cordiality and community of interest by the two Chairmen was formal recognition of the evident camaraderie between the two organizations.

NEWS

M. L. Crossley, F.A.I.C., has been in France and Spain since late in March attending first the Third Technical and Chemical International Congress of the Agricultural Industries at Paris and later the Ninth International Congress of Pure and Applied Chemistry at Madrid. Dr. Crossley expects to return to New York early in May, in time to attend the Twelfth Annual Meeting of The American Institute of Chemists on May 21st.

William J. Cotton, F.A.I.C., is retiring as Chairman of the Niagara Chapter, The American Institute of Chemists, having severed his connection with the National Aniline and Chemical Company. Mr. Cotton, a graduate of Ripon College, and M.S. of the University of Wisconsin, spent several years as Chemical Examiner with the U. S. Civil Service Commission before joining the National Aniline Company in Buffalo in 1919. He is a Charter member of The American Institute of Chemists as well as Charter member and first Chairman of the Niagara Chapter. He is also Vice-chairman of the Western New York Section, American Chemical Society.

Niagara Chapter wishes its retiring Chairman success and prosperity in his new ventures.

Hiram S. Lukens, F.A.I.C., addressed the April sixth meeting of the New York Section, American Chemical Society, on "The Mechanism of Conductance in Water Solutions."

Sumner R. Church, F.A.I.C., has been elected President of the American Wood Preservers' Association.

George Barsky, F.A.I.C., formerly with the American Cyanamid Corporation, and E. D. Wilson have established offices as Chemists and Chemical Engineers at 521 Fifth Avenue, New York, N. Y.

Hochstadter Laboratories, Inc., Irving Hochstadter, F.A.I.C., President, are now located at 254 W. 31st Street, New York, N. Y.

New Members

GEORGE MOIR JOHNSTONE MACKAY, S.M., F.A.I.C., is Director of Research with American Cyanamid Company, New York. He is a graduate of Dalhousie University and of Massachusetts Institute of Technology, has specialized in electrochemistry and has published many articles and patents in this and allied fields.

DANIEL F. WOODSON, JR., B.S., F.A.I.C., is Research Chemist with Calco Chemical Company. He is a graduate of the University of Virginia.

DEWITT DUNN SAGER, M.S., F.A.I.C., is Research Chemist at Picatinny Arsenal, Dover, Delaware. He is a graduate of McPherson College and of Michigan State College. He specializes in organic and physical chemistry.

KENNETH H. KLIPSTEIN, M.A., F.A.I.C., is connected with the Research Department of Calco Chemical Company. He is a graduate of Princeton University and specializes in organic syntheses.

ALFRED LOUIS PEIKER, Ph.D., F.A.I.C., is Research Chemist with The Calco Chemical Company at Bound Brook, New Jersey. Dr. Peiker was educated at Trinity College, Hartford, Conn., and McGill University. He specializes in Physical Chemistry and has published papers on cyanides and cyanates.

DAVID FREDERICK SMITH, Ph.D., F.A.I.C., is Professor of Chemistry at the University of Buffalo. Dr. Smith was educated at Syracuse University and the California Institute of Technology. He has published many original papers, and holds several U. S. patents, particularly in the fields of fuel chemistry, metallurgy, and physical chemistry.

ROY A. SHIVE, Ph.D., F.A.I.C., is Research Chemist with The Calco Chemical Company. He took his B.S. degree at Pennsylvania State College, his M.S. and Ph.D. from the University of Illinois. His publications include "Bioprecipitation in Sewage Purification" and U. S. Patents on Rubber Preservation.

ANDREWS C. WINTRINGHAM, B.Chem., F.A.I.C., is Chemist with the Calco Chemical Company. He graduated from Cornell University and specializes in dyes and pharmaceuticals.

DAVID HENRY WILCOX, JR., B.S., A.A.I.C., is Chemist with Amalgamated Dyestuff and Chemical Works, at Newark, N. J. He is a graduate of Wake Forest College and has done post-graduate work at Northwestern and Duke Universities.

FRANK SPITALERI, B.S., A.A.I.C., is Perfume Chemist with the Felton Chemical Company of Brooklyn, N. Y. He was educated at Cooper Union and Columbia University and specializes in essential oils and allied lines.

Through the devoted efforts of M. L. Crossley, F.A.I.C., the Institute can welcome six new Associates, all connected with the laboratories of Calco Chemical Company, Bound Brook, N. J. They are:

GEORGE LEWIS ROYER, Ph.D., A.A.I.C.; WENDELL PHILLIP MUNRO, Ph.D., A.A.I.C.; EUGENE CLIFTON MEDCALF, M.A., A.A.I.C.; ALFRED GARRETT HILL, Ph.D., A.A.I.C.; FREDERIC HENRY ADAMS, Ph.D., A.A.I.C.; CHARLES HARDSTER BENBROOK, M.Sc., A.A.I.C.

FRANK A. FABIANI, Ph.G., S.A.I.C., a new student member of the Institute is a pharmacist in Far Rockaway, New York, a graduate of Saint John's College.

Florin J. Amrhein, F.A.I.C., died March 30, 1934, at Brookline, Mass. He is survived by his wife. He was a graduate of Massachusetts College of Pharmacy, and published several books on pharmaceutical drug assay and analysis. He was a member of Brookline Mass Lodge, No. 886, B.P.O.E.; Chemists' Club of New York; Grand Regent, Kappa Psi Fraternity; and a Fellow in the American Association for the Advancement of Science. In addition to a consulting practice, he held the position of Assistant Professor of Chemistry at Massachusetts College of Pharmacy. Professor Amrhein had been a Fellow of The American Institute of Chemists since 1924.

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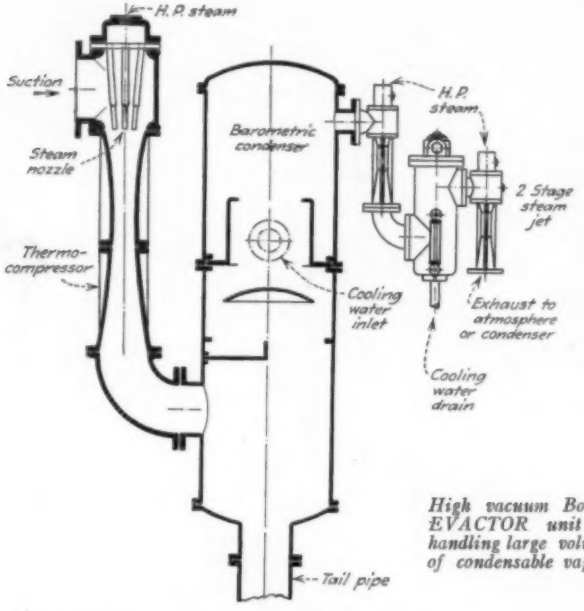

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